Bystrianský: Ambient ozone impact on vegetation - Abstract

Ambient ozone is present in the air all around the world. It is natural component of the atmosphere, due to anthropogenic emissions of ozone precursors its concentration rise. That is unlikely, because ozone is toxic. Ozone is formed as a part of photochemical smog from ozone precursors by photochemical reactions. As ozone precursors nitrogen oxides (NOx) and volatile organic compounds (VOC) are called. Their main source is car traffic. Danger of ozone lies in its reactivity. It oxidizes most of organic compounds, especially those containing double bonds. These are present in membrane lipids. Furthermore, ozone forms more reactive compounds than itself – active oxygen species (AOS), free radicals. Ozone effects negatively both human health and vegetation. Ozone disrupts structure of the cells, which for plants means destroy of leaves and needles, photosynthesis disruption and biomass loss. For that, plants have antioxidants system for AOS scavenging. But it has little effect, when concentration of ozone is high during smog period. Therefore, limits for maximal concentration of ozone in the ambient air are set.